

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 06-253097

(43)Date of publication of application : 09.09.1994

(51)Int.Cl.

H04N 1/04  
G06F 15/64  
G06F 15/64

(21)Application number : 05-035472

(22)Date of filing : 24.02.1993

(71)Applicant : MATSUSHITA ELECTRIC IND CO LTD

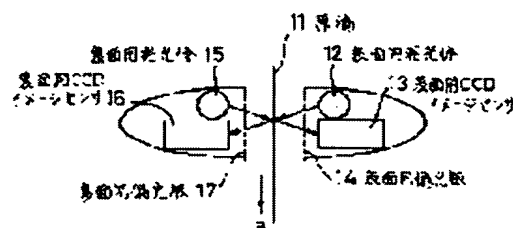
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(54) SCANNER

(57)Abstract:

**PURPOSE:** To eliminate the deviation of read positions on a front and a back and to miniaturize a scanner part by symmetrically positioning light emitting bodies and CCD image sensors on the both surfaces of a paper in the case of simultaneously reading the both surfaces of the paper.

**CONSTITUTION:** This scanner is constituted of the light emitting body 12 for a front surface and the CCD image sensor 13 for the front surface for reading the front surface of an original 11, the light emitting body 15 for a back surface and the CCD image sensor 16 for the back surface for reading the back surface of the original and a polarizing plate 14 for the front surface and the polarizing plate 17 for the back surface for passing light through provided with the planes of polarization in different directions respectively for the front surface and the back surface. The light emitting body for the front surface, the CCD image sensor for the front surface, the light emitting body for the back surface and the CCD image sensor for the back surface are arranged so as to face each other. Since the light emitting bodies and the CCD image sensors are arranged symmetrically at the front and the back, the scanner part can be miniaturized and the deviation of the read positions at the front and the back can be eliminated.



## LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

**Japan s Publicati n f r Unexamined Patent Application**

**No. 253097/1994 (Tokukaihei 06-253097)**

A. Relevance of the Above-identified Document

This document has relevance to claim 1 of the present application.

[ABSTRACT]

See the attached English Abstract.

[CLAIMS]

[CLAIM 3]

A scanner device comprising a set of a light emitter and a CCD image sensor which are oppositely provided, each set of a light emitter and a CCD image sensor being respectively placed on a front surface and on a rear surface of a document to scan both sides of the document and being operated to be alternately turned on and off.

[EMBODIMENTS]

[0018]

Figure 3 is a drawing illustrating a configuration of a scanner device according to the third embodiment, which shows a case where the set of a light emitter and a CCD image sensor on the front surface and the set of a light

emitter and a CCD image sensor on the rear surface are alternately operated (alternately turned on or off).

[0019]

As shown in Figure 3, 31 denotes a document thereon including printed information to be scanned, 32 denotes a light emitter for a front surface for scanning information of the front surface of the document 31, 33 denotes a CCD image sensor for a front surface for scanning light emitted from the light emitter for a front surface, 34 denotes a light emitter for a rear surface for scanning information of the rear surface of the document 31, 35 denotes a CCD image sensor for a rear surface for scanning light emitted from the light emitter for a rear surface, 36 denotes an operation control device for alternately turning on or off the set of the light emitter for a front surface and the CCD image sensor for a front surface, and the set of the light emitter for a rear surface and the CCD image sensor for a rear surface.

[0020]

The light emitter 32 for a front surface and the CCD image sensor 33 for a front surface; and the light emitter 34 for a rear surface and the CCD image sensor 35 for a rear surface are adjacently placed, respectively, and the respective light emitters 32 and 34, and the respective CCD scanners 33 and 35 are oppositely placed.

[0021]

The following will explain operation of the scanner device with reference to the operation timing chart shown in Figure 4. (1) and (2) of the figure respectively show the set of the light emitter 32 for a front surface and the CCD image sensor 33 for a front surface, and the set of the light emitter 34 for a rear surface and the CCD image sensor 35 for a rear surface. When the scanner device starts operation, (43 in Figure 4), the document 31 is inserted in a scanner section in a direction denoted by an arrow *a* (shown in Figure 3), one of the sets of a light emitter and a CCD image sensor starts the operation. (1) of Figure 4 shows an example where the set of the light emitter 32 for a front surface and the CCD image sensor 33 for a front surface is operated first (ON: operation state 41). The operation control device 36 first operates the set of the light emitter 32 for a front surface and the CCD image sensor 33 for a front surface so as to scan 1 line of information on the front surface of the document 31. Here, as shown in (2) of Figure 4, the set of the light emitter 34 for a rear surface and the CCD image sensor 35 for a rear surface is not in operation (OFF: non-operation state 42). When the CCD image sensor 33 for a front surface completes the scanning of 1 line of information of the document 31, the operation control device 36 stops

operation (OFF) of the set of the light emitter 32 for a front surface and the CCD image sensor 33 for a front surface, and starts operation (ON) of the set of the light emitter 34 for a rear surface and the CCD image sensor 35 for a rear surface so as to scan the opposite side of the 1 line of information of the document 31 whose another surface has been scanned by the CCD image sensor 33 for a front surface. When the CCD image sensor 35 for a rear surface completes the scanning of the 1 line of information of the document 31, the operation control device 36 stops operation (OFF) of the set of the light emitter 34 for a rear surface and the CCD image sensor 35 for a rear surface, and then shifts the document 31 by 1 line, and again operates the set of the light emitter 32 for a front surface and the CCD image sensor 33 for a front surface. This operation is repeated until scanning of all information of the document 31 is completed.

(19)日本国特許庁(JP)

(12)公開特許公報(A)

(11)特許出願公開番号

特開平6-253097

(43)公開日 平成6年(1994)9月9日

(51)Int.Cl.<sup>5</sup>

H04N 1/04

G06F 15/64

識別記号

102

320 B

325 B

庁内整理番号

7251-5C

7631-5L

7631-5L

F I

技術表示箇所

審査請求 未請求 請求項の数3 OL (全5頁)

(21)出願番号

特願平5-35472

(22)出願日

平成5年(1993)2月24日

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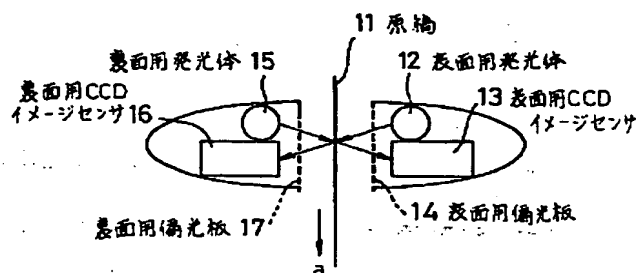
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(54)【発明の名称】 スキャナ装置

(57)【要約】

【目的】 紙の両面を同時に読み込む場合に、発光体とCCDイメージセンサを紙の両面に対称に位置させることによって、表裏の読み込み位置のずれをなくし、スキャナ部分を小型化する。

【構成】 原稿11の表面を読み込むための表面用発光体12と表面用CCDイメージセンサ13、原稿の裏面を読み込むための裏面用発光体15と裏面用CCDイメージセンサ16、表面と裏面でそれぞれ異なった方向の偏光面をもった光を通過させる表面用偏光板14と裏面用偏光板17で構成され、表面用発光体および表面用CCDイメージセンサと裏面用発光体および裏面用CCDイメージセンサは共に向かい合わせで配置されている。発光体とCCDイメージセンサが表裏対称に配置されているため、スキャナ部分が小型化でき、表裏の読み取り位置のずれをなくすることができる。



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Dイメージセンサの動作時間(ON)、非動作時間(OFF)のタイミングをずらし、表面と裏面で交互に1ラインずつ読み込むようにする。

【0010】

【作用】本発明によれば、発光体とCCDイメージセンサが表裏対称に配置された構成としたことにより、スキャナ部分が小型化でき、しかも表裏の読み取り位置のずれをなくすることができる。

【0011】

【実施例】図1は本発明の第1の実施例におけるスキャナ装置の構成図を示し、図1に示すように、11は両面に読み込みたい情報が印刷されている原稿であり、12は原稿11の表面の情報を読み込ませるための表面用発光体、13は表面用発光体12の発した光を読み取る表面用CCDイメージセンサ、14は表面用発光体12が発した光を偏光し表面用CCDイメージセンサ13にその偏光面を持つ光を読み取らせるための表面用偏光板、15は原稿11の裏面の情報を読み込ませるための裏面用発光体、16は裏面用発光体15の発した光を読み取る裏面用CCDイメージセンサ、17は裏面用発光体15が発した光を偏光し裏面用CCDイメージセンサ16にその偏光面を持つ光を読み取らせるための裏面用偏光板である。この表面用偏光板14と裏面用偏光板17はそれぞれの偏光面が互いに垂直に交わるように配置しているので、双方のCCDイメージセンサ13、16とも他方から発せられ原稿を透過した光の影響を受けることがない。

【0012】表面用発光体12および表面用CCDイメージセンサ13ならびに、裏面用発光体15および裏面用CCDイメージセンサ16はそれぞれ隣接しており、表面用発光体12および表面用CCDイメージセンサ13と原稿11の間に表面用偏光板14を配し、裏面用発光体15および裏面用CCDイメージセンサ16と原稿11の間に裏面用偏光板17を配し、原稿11に対して表裏対称の位置に配置されている。

【0013】次に動作を説明すると、原稿11を矢印a方向からスキャナ部に入れると、表面用発光体12と裏面用発光体15が同時に光を発し、表面用偏光板14と裏面用偏光板17を通ったそれぞれの偏光が、原稿11の表面と裏面でそれぞれ反射、透過し、表面用偏光板14と裏面用偏光板17でそれぞれ表面用発光体12の反射光と裏面用発光体15の反射光が通過し、それぞれ表面用CCDイメージセンサ13と裏面用CCDイメージセンサ16によって読み取られる。裏面用発光体15または表面用発光体12で発せられ原稿11を透過した偏光は、表面用偏光板14または裏面用偏光板17とは偏光面が異なるため通過できず、CCDイメージセンサに影響を及ぼすことはない。

【0014】図2は本発明の第2の実施例におけるスキャナ装置の構成図を示し、これは波長の異なる発光体を使用する場合である。

【0015】図2に示すように、21は両面に読み込ませ

(3)

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たい情報が印刷されている原稿であり、22は原稿21の表面を読み込ませるための表面用発光体、23は表面用発光体22の発した光の波長と同じ波長の光を読み取る表面用CCDイメージセンサ、24は原稿21の裏面を読み込ませるための裏面用発光体で、表面用発光体22とは異なる波長の光を発し、25は裏面用発光体24の発した光の波長と同じ波長の光を読み込む裏面用CCDイメージセンサである。

【0016】表面用発光体22と表面用CCDイメージセンサ23、裏面用発光体24と裏面用CCDイメージセンサ25はそれぞれ隣接して、表裏それぞれの発光体とCCDイメージセンサは互いに向かい合って配置される。

【0017】次に動作を説明すると、原稿21を矢印a方向からスキャナ部に入れると、表面用発光体22と裏面用発光体24が同時に発光し、それぞれ表面用CCDイメージセンサ23と裏面用CCDイメージセンサ25が原稿21の表面と裏面を読み取る。表面用発光体22または裏面用発光体24が発した光のうちで、原稿21を透過した光は、それぞれ裏面用CCDイメージセンサ25または表面用CCDイメージセンサ23まで届くが、裏面用CCDイメージセンサ25または表面用CCDイメージセンサ23が読み取る光の波長とは異なっているので、表面用発光体22の光が裏面用CCDイメージセンサ25に、または裏面用発光体24の光が表面用CCDイメージセンサ23に影響を及ぼすことはなく、両面同時に読み込むことができる。

【0018】図3は本発明の第3の実施例におけるスキャナ装置の構成図を示し、これは表面と裏面の発光体とCCDイメージセンサを互い違いに繰り返し動作—非動作(ON—OFF)する場合である。

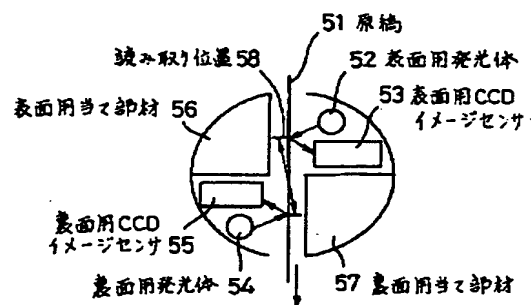
【0019】図3に示すように、31は両面に読み込みたい情報が印刷されている原稿であり、32は原稿31の表面の情報を読み込ませるための表面用発光体、33は表面用発光体32の発した光を読み取る表面用CCDイメージセンサ、34は原稿31の裏面の情報を読み込ませるための裏面用発光体、35は裏面用発光体34の発した光を読み取る裏面用CCDイメージセンサ、36は表面用発光体32と表面用CCDイメージセンサ33、裏面用発光体34と裏面用CCDイメージセンサ35を互い違いに繰り返しON—OFFさせる動作制御装置である。

【0020】上記表面用発光体32と表面用CCDイメージセンサ33、裏面用発光体34と裏面用CCDイメージセンサ35はそれぞれ隣接して配置され、発光体同士、CCDイメージセンサ同士で向かい合って配置されている。

【0021】次に動作を図4の動作タイミング図を用いて説明すると、(1)は表面用発光体32および表面用CCDイメージセンサ33、(2)は裏面用発光体34および裏面用CCDイメージセンサ35の各動作状態を示す。スキャナ装置が動作を開始し(図4の43)、原稿31を矢印a方向からスキャナ部に入れると、最初にどちらかの発光体とCCDイメージセンサが動作するので、一例として表面

(5)

【図5】



フロントページの続き

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Creation date: 10-02-2003  
Indexing Officer: ARAHMANYAR - ABDUL RAHMANYAR  
Team: OIPEScanning  
Dossier: 10667267

Legal Date: 09-18-2003

No.	Doccode	Number of pages
1	TRNA	3
2	SPEC	11
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4	DRW	2
5	OATH	3
6	WFEE	1
7	WFEE	1

Total number of pages: 25

Remarks:

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# NEW APPLICATION DOCUMENT INDEX SHEET



A DOCPHOENIX

<input checked="" type="checkbox"/> TRNA <u>3</u>	Transmittal New Application
<input type="checkbox"/> SPEC	Specification
<input type="checkbox"/> CLM	Claims
<input type="checkbox"/> ABST	Abstract
<input type="checkbox"/> DRW	Drawings
<input type="checkbox"/> OATH	Oath or Declaration

<input type="checkbox"/> ADS	Application Data Sheet	<input type="checkbox"/> IDS	IDS Including 1449
<input type="checkbox"/> A...	Amendment Including Elections	<input type="checkbox"/> 371P	PCT Papers in a 371P Application
<input type="checkbox"/> A.PE	Preliminary Amendment	<input type="checkbox"/> FOR	Foreign Reference
<input type="checkbox"/> REM	Applicant Remarks in Amendment	<input type="checkbox"/> NPL	Non-Patent Literature
		<input type="checkbox"/> FRPR	Foreign Priority Papers
		<input type="checkbox"/> ARTIFACT	Artifact

<input type="checkbox"/> LET.	Misc. Incoming Letter
<input type="checkbox"/> IMIS	Misc. Internal Document

<input type="checkbox"/> TRREISS	Transmittal New Reissue Application
<input type="checkbox"/> PROTRANS	Translation of Provisional in Nonprovisional

<input type="checkbox"/> BIB	Bib Data Sheet	<input type="checkbox"/> APPENDIX	Appendix
<input type="checkbox"/> WCLM	Claim Worksheet	<input type="checkbox"/> COMPUTER	Computer Program Listing
<input type="checkbox"/> WFEE	Fee Worksheet	<input type="checkbox"/> SPEC NO	Specification Not in English
		<input type="checkbox"/> N417	Copy of EFS Receipt Acknowledgement

<input type="checkbox"/> CRFL	Computer Readable Form Transfer Request Filed	<input type="checkbox"/> AF/D	Affidavit or Exhibit Received
<input type="checkbox"/> CRFS	Computer Readable Form Statement	<input type="checkbox"/> DIST	Terminal Disclaimer Filed
<input type="checkbox"/> SEQLIST	Sequence Listing	<input type="checkbox"/> PET.	Petition
<input type="checkbox"/> SIR.	SIR Request		

☐ END JOB

☐ DUPLEX

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10/667267  
09/18/03

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16179 U.S. PTO  
09/18/03

September 18, 2003

VIA EXPRESS MAIL #EV 007129470 US

U.S. Commissioner of Patents  
and Trademarks  
Washington, D.C. 20231

RE: New UTILITY Patent Application Entitled:  
**IMPROVED SPIKE AND SURGE PROTECTOR  
FOR VEHICLES**

Inventor: Michael E. Beatty  
Assignee: SAFCO CORPORATION

Dear Sir:

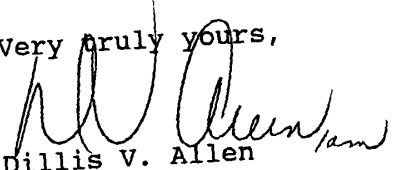
Enclosed herewith is a new patent application in the above case including 2 sheets of informal drawings, an Oath and Assignment with attached Cover Sheet, a Non-Publication Request, and a return postcard.

Both the inventor of this patent application, as well as the assignee, SAFCO CORPORATION, elect Small Entity status.

My check in the amount of \$457 is enclosed representing \$375 for the basic filing fee, \$42 for one independent claim in excess of three, and \$40 for recording the Assignment.

Please give this application the earliest possible filing date.

Very truly yours,

  
Dillis V. Allen  
Reg. No. 22,460  
Attorney for Applicant

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enclosures

**CERTIFICATE OF MAILING BY EXPRESS MAIL**

This is to certify that the above documents are being deposited with the United States Post Office as Express Mail on September 18, 2003, Express Mail No. EV 007129470 US.



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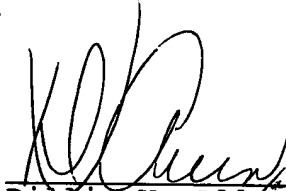
Diane K. Mauter

### NON-PUBLICATION REQUEST

In accordance with the provisions of 37 CFR 1.213, applicant, Michael E. Beatty requests, in a conspicuous manner, that the application being filed herewith entitled **"IMPROVED SPIKE AND SURGE PROTECTOR FOR VEHICLES"**, is not to be published under 35 USC 122(b).

The invention disclosed in this application has not been, and will not be, the subject of an application filed in another country, or under a multilateral international agreement, that requires publication of applications 18 months after filing, and therefore, this application should not be published under 35 USC 122(b), and Section 1.221.

In accordance with the provisions of 37 CFR 1.213(3), the applicant certifies that the invention disclosed in this application has not been and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication 18 months after filing.



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A DOCPHOENIX

☐ TRNA \_\_\_\_\_  
Transmittal New Application

☒ SPEC 11 \_\_\_\_\_  
Specification

☐ CLM \_\_\_\_\_  
Claims

☐ ABST \_\_\_\_\_  
Abstract

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☐ APPENDIX \_\_\_\_\_  
Appendix

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Terminal Disclaimer Filed

☐ PET. \_\_\_\_\_  
Petition

☐ END JOB☐ DUPLEX

## **IMPROVED SPIKE AND SURGE PROTECTOR FOR VEHICLES**

### **ABSTRACT OF THE DISCLOSURE**

A surge and spike protector for supplying power to P.C. notebooks, PDA's and other devices from a vehicle's accessory power sockets, including a housing having a power plug insertable into one of the accessory sockets and output sockets for receiving a device power plug, a circuit having a varistor in series with a fuse for suppressing positive voltage surges, a diode for suppressing negative voltage spikes, and an indicator circuit for displaying proper or improper protection functions.

## **BACKGROUND OF THE PRESENT INVENTION**

The proliferation of DC powered and charged mobile/portable products has resulted in connecting these products to a vehicle's electrical system during all states of vehicle operation. Prior to the miniaturization of these products, the electrical power for operating or charging was from AC sources. AC power, although highly controlled, still produces significant fluctuations, transients and electrical noise. AC power conditioning is most often provided through a separate power conditioning device, commonly referred to as a surge and spike protector. AC power conditioning devices protect sensitive circuits from voltage spikes caused by lightning, electrostatic discharge and power surges caused by power grid interruptions and other potentially dangerous live transients.

12-volt direct current(DC) is potentially a more variable and complex electrical environment than traditional AC sources. The Society of Automotive Engineers(SAE) has defined the electrical environment in SAE specification SAE 1113/11, Section 8, Test Pulses and Appendix B, Test Severity Levels. Some examples from Section 8 and comments follow.